HOW TO IDENTIFY LEAD USERS BY CUSTOMER COMPETENCE

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Abstract

Lead users can provide more help for the product development because they have leading requirements and rich experiences on product usage. Therefore, the company must invite lead users to participate development. But by far, it’s still a difficulty to identify lead users from a large amount of common consumers. This paper makes a research and found that, the difference between lead users and common consumers is that lead users have higher competencies than common consumers. So, customer competence can be used as an indicator to measure lead users. Based on this, a model of identifying lead users by computing their competencies is built. In this model, customer’s competences of innovation, cooperation, communication and knowledge are considered as major dimensions for identifying lead users. By using this model, a company should be able to identify lead users more easily, regardless of in industrial market or consumer market.

Keywords:
Lead user, Customer competence, identify, customer participation, new product development

1 INTRODUCTION

Users are the first to develop many and perhaps most new industrial and consumer products [1]. Past innovation research shows that users rather than manufacturers are often the initial developers of—the “idea generators” for—what later become commercially significant new products and processes (e.g., Enos 1962, Freeman 1968, von Hippel 1988, and Shaw 1985) [2]. In the light of this, an enterprise that collects such creative ideas from users systematically tends to obtain competitive advantage. As a result, customer participation must be introduced into whole process of product development to meet the real customer needs.

However, to invite customer to participate development, manufacturers must consider some questions: Can users be selected randomly? Which users will create more value for development? How many users should be selected to meet the accepted cost? etc. In practice, it’s unfeasible for enterprise to pick users randomly or invite a large amount of users to participate, because the cost will lost control. Moreover, users with different competence will create different value, only users with appropriate competence can create high value, others will result in resource waste. For most consumers, they are too familiar with existing products to make innovation or improvement (this is called “functional fixedness” effect) [3]. Obviously, this kind of users can’t play important role or create great value in participation of development, because their innovation competence is limited. Therefore, it’s not a good way to pick common consumers randomly to participate development.

Eric von Hippel originated lead user concept. "Lead users" are defined as those who display two characteristics with reflect to it:

a. Lead users face needs that will be general in a marketplace—but face them months or years before the bulk of that marketplace encounters them, and
b. Lead users are positioned to benefit significantly by obtaining a solution to those needs [5].

For the first characteristic, since lead users are at the front end of market trend, their novel innovation or modification to existing product should be accepted by other common users. Moreover, lead users experience needs in advance of the bulk of a target market, while the nature, risks, and eventual size of that target market are often not clear to manufacturers. This lack of clarity can reduce manufacturers’ incentives to innovate, and increase the likelihood that lead users will be the first to develop their own innovative solutions for needs that later prove to represent mainstream market demand [6].

For the second characteristic, since lead users expect to benefit significantly from the solution that meets their leading needs, they will expend great efforts for the solution. This is reflected by their activity – making innovation by themselves to meet their own needs.

From above, lead users have an important competence, that is, self-innovation. This competence includes two aspects: be able to foresee the future market needs; have technique or knowledge to develop, design and improve products.

To invite lead users to participate development, the first thing is to identify them. Existing lead user identify method and its advantage/disadvantage will be discussed in following section.
3. **EXISTING LEAD USER IDENTIFICATION METHOD AND ITS ADVANTAGE/DISADVANTAGE**

Eric Von Hippel et al have developed some methodology about lead user theory. In existing research literature, most process of identifying lead users were accomplished in a way of survey or questionnaire. As von Hippel et al mentioned, the identification for lead user is included in a four-step mode:

1. **Specify lead user indicator**
   - Identify trends: trends may be identified by consulting experts
   - Identify high benefit expectations: this can be found by survey or questionnaire, etc

2. **Identify lead user group**
   - Identify users with 2 indicators mentioned above.
   - Since some users found by this way may not be willing to cooperate with enterprise, a second filter process may be needed to find out the users that are interested in cooperation.

3. **Develop lead user product concept**

4. **Test whether lead user concepts appeal to typical users.**

In this method, the identification for lead user is focused on the first two steps above. In existing literature, almost all the LU cases followed the four-step mode. Eric Von Hippel et al made research on both high-tech field (e.g., PC-CAD system) and relative low-tech field (e.g. pipe fitting), and found lead user method can be more effective for developing new product ideas and lower costs as well. And the product concept developed by lead users often be more novel, can capture more market share, and play more important role in decision-making. Hence, this methodology can be considered as a feasible, correct way in these cases.

But by far, Von Hippel's studies of lead users are from industrial markets and do not include consumer markets. A fact is that it's hard to find lead users on consumer markets. An outstanding characteristic of industrial products is that, industrial products are typically only applied to limited, industry-specific user group. Since only specific users will be involved, these users can be targeted and located relatively easily. And then, lead users can be filtered out from the specific user group by survey or questionnaire, etc. While, for consumption product industry with millions of consumers, it's impossible to filter lead users by ways such as survey. By far, it's still very difficult to identify lead users in consumer market by the traditional way.

4. **IMPROVED LEAD USER IDENTIFICATION MODE – IDENTIFY LEAD USERS BY CUSTOMER COMPETENCE**

4.1 **Why customer competence can be used as indicator to measure lead user**

Customer competence is defined by C.K. Prahalad as following: The competence that customers bring is a function of the knowledge and skills they possess, their willingness to learn and experiment, and their ability to engage in an active dialogue [7]. For lead users, the connotation of the definition include:

Knowledge and skills: Since lead users can foresee the future needs (the first characteristic of lead user), and can even make innovation or improvements by themselves, they should be more familiar with the product and related professional knowledge than common users, that means, lead users have more knowledge and skills (stronger knowledge competence).

Willingness to learn and experiment: In the traditional mode of Von Hippel, the questions in survey such as "Do you / did you ever build and install product of your own design? Do you / did you ever modify commercially available product to better suit your needs?" are used to measure the user capability of learning and self-experimenting (innovation competence). Since lead users expect to benefit significantly from the solution that meets their leading needs (the second characteristic of lead users), they should have desire and capability to self-innovate products to meet their needs. That is, lead users should have better innovation competence than common users.

Ability to engage in an active dialogue: In the traditional mode of Von Hippel, the questions in survey such as "Could user describe his experiences and ideas clearly?; Did the user seem to have a strong personal interest in the development of improved product?" are used to determine if users are willing to participate development. Actually, these questions are used to measure the users' communication competence and cooperation competence. Compared with common users, lead users should have more participation/cooperation willingness when enterprise can provide them with participation opportunities and development environment, because they have more expectation to benefit from innovation to meet their leading needs (the second characteristic of lead users). On the other hand, because lead users have stronger knowledge competence than common users, they can express their creative ideas or comments more clearly to help manufactures or developers know the product defects and how to improve the product. As a result, lead users have more willingness to participate development, and have more capabilities to express ideas, that is, lead users have stronger cooperation competence and communication competence than common users.

As discussed above, from the customer competence's perspective, lead users have stronger competence than common users, and both of the lead user characteristics can be reflected and explained by customer competence. As a result, customer competence can be used as an indicator to measure lead users. The customer competences that reflect lead user characteristics can be divided into indicators as following:

- Innovation competence
- Knowledge competence
- Cooperation competence
- Communication competence

Customer competences may include some other ones, such as economy competence (this is important during customer's purchasing), propaganda competence, etc. But in this research for lead users, these competences take minor effect and will be ignored in this paper for simplification purpose.

4.2 **Build new model of identifying lead users by customer competence**

To divide the competence indicator into more detail, sub indicators are listed for the 4 major competence indicators as following:

1) **Innovation competence C1**

This indicator can be divided into sub indicators as following (followed by description):

- Ability to devote resources for innovation $C_{11}$: The amount of resources (funds/labor) that the user can invest into the innovation.

Result of previous innovation activities $C_{12}$: The quality of
user’s previous innovation result and the market response for the previous innovations.

Propensity to innovate C13: Same as innovation initiative. This can be reflected by frequency of innovation activities, amount of previous innovation results, etc.

Urgency of needs for innovation C14: Users that are anxious to obtain innovation solutions are tend to make innovation by themselves, instead of waiting for results of developments by manufactures.

2) Knowledge competence C2

This indicator can be divided into sub indicators as following (followed by description):

Knowledge level C21: For example, user’s education qualification, experiences on related professional field, etc.

Familiarity with product C22: User’s familiarity to the products, including knowledge about product’s advantages/disadvantages, various performance indicators and design parameters, etc.

Understanding to user’s needs C23: The degree of understanding for user’s real needs about product price, style, performance, etc.

Understanding to alternative products C24: User’s familiarity for competitive advantages of similar products in market.

3) Cooperation competence C3

This indicator can be divided into sub indicators as following (followed by description):

Propensity to participate C31: The cost and benefits bring from cooperation with enterprise will affect the user’s propensity to participate. Users will decide to cooperate or not by measuring the benefits and costs caused by cooperation. The more benefits expected, the higher the propensity to participate.

Persistency to cooperate C32: This is used to judge if user can cooperate with enterprise in a long term with a steady status.

Common interests with enterprise C33: When users and enterprise are banded together closely by ties of common interests, users will be more willing to cooperate with enterprise. If co-operation with an enterprise will maximum the user’s benefits, the user will also cooperate with the enterprise actively.

Customer relationship C34: Users will be more willing to cooperate with enterprises that have good relationships with them.

4) Communication competence C4

This indicator can be divided into sub indicators as following (followed by description):

Capability of expression C41: Ability to express needs and creative ideas clearly and accurately. This includes the ability to express abstract creative ideas to product concept that can be manufactured.

Usage for various communication channels/tools C42: Different users have different communication channels/tools to use for communication with enterprise, causing their communication competence different.

Ability of complaint C43: Users can point out product defect by complaint to enterprise, this is also a kind of communication competence.

Ability to discuss with developers about solutions C44: Discussion is another form of communication. While, users need more competence to discuss with developers directly.

(Note: For simplification purpose, only major sub indicators are listed above. Other possible minor factors are ignored in this paper to avoid complicated discussion.)

As discussed before, the characteristics of lead users are reflected by their higher customer competences. So, enterprise can give rating for each of the competence indicators listed above, and compute the weighted sum of all ratings. The users with higher sum value can be considered as those with higher customer competences.

By comparing ratings further in these users, a rank of ratings can be sorted and the users at the top of the rank can be considered as the lead users since they should have the highest competence.

A model that filter lead users by computing customer competences will be built as following:

There are n first-level competence indicators Ci (i = 1 ~ n, and in this paper, n = 4) to consider. Each of the indicators should have different weight Pi, where:

\[ \sum_{i=1}^{n} P_i = 1 \]  

Every first-level competence indicator Ci is made up of m second competence indicators Cij (j = 1 ~ m, and in this paper, m = 4. In fact, m can be different for each first-level competence indicator). As a result, the total sum for each first-level competence should be:

\[ C_i = \sum_{j=1}^{m} C_{ij} \]

The total sum of customer competence should be:

\[ C = \sum_{i=1}^{n} (C_i \times P_i) = \sum_{i=1}^{n} \left( \sum_{j=1}^{m} C_{ij} \times P_i \right) \]

User’s competence value C can be computed by this formula. The users with highest C value can be considered as lead users.

In practice, especially for consumer market, it’s impossible to compute every consumer’s competence value by this way because the number of consumers is too large. So, some pre-filtering may be needed first, to judge which user group has more potential to emerge lead users. For example, for shaver products, male users should be more familiar with products than female users, so it’s more possible for lead users in this field to appear in male user group. Then further filtering can be performed in male user group, and so on. Enterprise can also pre-filter user groups with higher competence by survey or other experience data. When the targeted user groups are limited to an acceptable extent (under the control of cost), enterprise can use model above to rate the users’ competence and compute the competence value to identify lead users.

5) CASE STUDY

The author observed and researched the customer participation activities in a sport-shoe enterprise in south China. At first, the enterprise can’t confirm which users should be invited to participate development. It will be very costly and inefficient to choose users randomly from a large amount of common consumers. On the other hand, picking lead users is also very difficult because it’s very hard to identify lead users based on traditional method. The author researched and found that dealers have higher competences than common consumers, because dealers have more professional skills to self-improve and self-design, master more information to foresee the future market trend/fashion, and can cooperate and communicate with enterprise more actively and conveniently. So, dealers should have potential to become a group that can emerge
lead users. Since the extent and number of dealers is limited, it will be much easier for enterprise to find lead users in dealers group by further comparing and filtering, and lower cost as well.

The following table lists the comparison result for competences of dealers and common consumers:

<table>
<thead>
<tr>
<th>First-Level Competence</th>
<th>Secondary Competence indicator</th>
<th>Dealer Competence (C1)</th>
<th>Consumer Competence (C2)</th>
<th>Comparison result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Competence</td>
<td>Ability to devote resources for innovation</td>
<td>Can invest a large amount of resources</td>
<td>Only personal strength can be devoted</td>
<td>C1&gt;&gt;C2</td>
</tr>
<tr>
<td></td>
<td>Result of previous innovation activities</td>
<td>Have rich innovation experiences; ever developed successful new products accepted by market; can forecast the future trend and fashion</td>
<td>It’s hard for an individual to self-innovate and foresee the future trend</td>
<td>C1&gt;&gt;C2</td>
</tr>
<tr>
<td></td>
<td>Propensity to innovate</td>
<td>To adapt the changing market, always tend to innovate actively</td>
<td>Seldom self-innovate, just accept new product in a passive manner</td>
<td>C1&gt;&gt;C2</td>
</tr>
<tr>
<td></td>
<td>Urgency of needs for innovation</td>
<td>Dealers having new products will be able to capture the preemptive market opportunities in a competitive environment, so they should have more urgent innovation need</td>
<td>Innovation doesn’t have much to do with individual’s benefits, so there’s no urgent innovation needs for individual user</td>
<td>C1&gt;&gt;C2</td>
</tr>
<tr>
<td>Knowledge Competence</td>
<td>Knowledge level</td>
<td>Have designers with professional skills and experiences</td>
<td>May have different education level</td>
<td>C1&gt;C2</td>
</tr>
<tr>
<td></td>
<td>Familiarity with product</td>
<td>Be very familiar with product details, such as technique, defects, material, design parameters, etc</td>
<td>Only know about style, brand, etc. Don’t be familiar with professional technique details, and don’t have ability to design</td>
<td>C1&gt;&gt;C2</td>
</tr>
<tr>
<td></td>
<td>Understanding to user’s needs</td>
<td>Understand user’s needs very much because dealers may touch thousands of customers, and have rich information from sources such as survey</td>
<td>Individual users lack of information, and often select product based on personal preference/interest or suggestion from others. They are not clear about their real needs.</td>
<td>C1&gt;&gt;C2</td>
</tr>
<tr>
<td></td>
<td>Understanding to alternative products</td>
<td>Have extensive information and be very familiar with products of competitors in the same market</td>
<td>Lack of information; maybe learnt about or tried small amount of similar products</td>
<td>C1&gt;C2</td>
</tr>
<tr>
<td>Cooperation Competence</td>
<td>Propensity to participate</td>
<td>Persistency to cooperate</td>
<td>Common interests with enterprise</td>
<td>Customer relationship</td>
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</tr>
<tr>
<td>Expect to benefit significantly from cooperation with enterprise, so there's a higher propensity to participate.</td>
<td>It will be relatively high cost and low benefit for an individual to cooperate with enterprise, so individuals don't have high propensity to participate.</td>
<td>Interrupting cooperation or changing partner is not good because it will be costly and time consuming to rebuild relationship and trust. So in general, dealers will try to keep a long-term cooperation with enterprise.</td>
<td>Dealers always share common interest with enterprise by cooperation.</td>
<td>For individuals, they have many alternative products to choose, so they don't care common interests with enterprise.</td>
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</table>
According to the comparison result listed above, dealers’ competences are much higher than common consumers’ in various aspects.

After determining that dealers should be the target group which lead users belong to, enterprise can set weight and rating for each competence sub indicators according to the actual conditions and compute competence value, to get an accurate, quantitative analysis result. The dealers with highest competence value can be considered as lead users.

In this case, all the lead users filtered out by competence built a good cooperation with enterprise to develop new product. They developed new fashion of sport-shoes that are very popular among common consumers. Facts have proved that the way of identifying lead users by competence is effective and successful, and this method can be promoted to various consumption product markets.

6 CONCLUSION

Lead users should be invited to participate new product development. The traditional method of identifying lead users by survey is only limited to industrial market, and difficult to identify lead users in consumer market. The lead user identification method in this paper is designed to find a more reasonable, common way to identify lead users more easily regardless of industrial market or consumer market. The research on the traditional lead user theory and customer competence theory shows that both the two key characteristics of lead users can be reflected by customer competence, and lead users’ competence is much higher than common users’. As a result, customer competence can be used as an indicator to measure the lead users. Then, lead users can be identified by measuring their customer competence. The users with highest competence value can be considered as lead users. This paper builds a computing model for identifying lead users by using customer competence, and proves the model with a real case.

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8 REFERENCE